

Basic characteristic of linear displacement sensor using meander coil and pattern guide

ABSTRACT

Linear displacement sensor is used to detect the actual displacement of the moving objects in the Linear DC Motor (LDM) (Wakiwaka et al, 1996). The accuracy of the detection is very important to make sure the production process operate properly. The displacement sensor based on the inductive concepts has been developed. It is composed of the sensor head and pattern guide. The combination of the sensor head and pattern guide is important to get the high accuracy of the positioning. Sensor head is made from copper material while pattern guide is made from soft iron SS400. The displacement of pattern effects to the output voltage for various input frequency and exciting voltage has been observed and discussed in this paper. From the results obtained, output voltage increases as the input frequency and exciting voltage increases. In term of hysteresis and linearity, input frequency 20kHz and exciting voltage 1.0 volt is the best performance of sensor.

Keyword: Linear displacement sensor; Displacement; Accuracy; Inductive; Sensor head; Pattern guide; Output voltage; Input frequency; Exciting voltage; Hysteresis; Linearity